Mitigation of N_2O and CH^4 Emissions from Corn Field using Urea Granulated with Nitrification Inhibitors and Zeolite

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Abstract

Agriculture accounted considerably to the greenhouse gases emission such as N2O and CH4. The aim of study is assessing reduction of N_2O and CH^4 emissions from corn field fertilized with urea granulated nitrification inhibitor namely dicyandiamide (DCD) and neem (N) and zeolite as slow release media. The results show that nitrification inhibitors and zeolite is reducing both N_2O and CH^4 emissions from corn field fertilized. We observed that the application of urea (U) with dicyandiamide (UD), U with zeolite (UZ), U with neem (UN), U with zeolite+neem (UZN), and U with zeolite+ DCD decreased the N_2O emissions by 86.73%, 59.65%, 16.38%, 66.85%, and 81.94%, respectively. Therefore, larger reduction of N_2O emission in corn field was applied by UD. However, applying UD in field seems enhance CH^4 emission 0.95 kg CH^4-C ha-1 season-1 compared to other treatments. The observations should be further being tested to an integrated abatement of agricultural nitrogen as well as carbon losses.

Keywords: Corn field, Emission of N2O and CH4, Mitigation, Nitrification inhibitor